

In the Claims

This listing of claims will replace all prior versions, and listings, of claims.

Listing of Claims

1. (Previously Presented): A black image insertion method for display, a black image being inserted between two frames of a liquid crystal display, each of the frames being displayed by a plurality of liquid crystal cells, each of the crystal cells having a first electrode and a second electrode, the first electrode being connected to a switching transistor and also connected to one terminal of a black image transistor, a plurality of enable pulses periodically switching the switching transistor, and the second electrode being connected to a common voltage with a steady voltage value, the black image insertion method comprising:

sending one of the enable pulses through a scanning line to switch on the switching transistor, a voltage of the first electrode being changed to a data voltage; and

sending a black image enable pulse through a black image line to switch on the black image transistor before a next enable pulse switches on the switching transistor again, when the black image transistor is switched on, the first electrode of the liquid crystal cell is conducted to the black image line which is connected to the other terminal of the black image transistor, so as to change the voltage of the first electrode from the data voltage to a black image voltage, wherein the second electrode of the liquid crystal cell is isolated from the black image line.

2. (Original): The black image insertion method of claim 1, wherein the black image voltage is between the common voltage plus a zero-level gray scale voltage and the common voltage minus the zero-level gray scale voltage.

3. (Previously presented): The black image insertion method of claim 1, wherein the black image insertion method further comprises:

providing an initial voltage to the black image transistor to turn off the black image transistor during sending the enable pulse to switch on the switching transistor.

4. (Previously presented): The black image insertion method of claim 3, wherein the black image insertion method further comprises:

returning a voltage of the black image transistor to the initial voltage after the voltage of the first electrode is changed from the data voltage to the black image voltage.

5-6. (Canceled)

7. (Previously presented): The black image insertion method of claim 1, wherein when a source and a gate of the black image transistor are connected to the initial voltage and a drain of the black image transistor is connected to the first electrode, the initial voltage is lower than the data voltage and the black image enable pulse is higher than the data voltage.

8. (Previously presented): The black image insertion method of claim 1, wherein when a source and a gate of the black image transistor are connected to the first electrode and a drain of the black image transistor is connected to the initial voltage, the initial voltage is higher than the data voltage and the black image enable pulse is lower than the data voltage.

9-12. (Canceled)

13. (Previously presented): A black image insertion circuit for display, the black image insertion circuit for display comprising:

- a switching transistor;

- a liquid cell having a first electrode and a second electrode, wherein a common voltage is constantly applied to the second electrode;

- a scan line arranged to send an enable pulse for switching the switching transistor;

- a data line arranged to send pixel data to the first electrode through the switching transistor;

- a black image line arranged to send a black image enable pulse for coupling with the voltage of the first electrode; and

- a storage capacitor connecting the first electrode and the black image line; and

- a black image transistor connecting the first electrode and the black image line.

14. (Canceled)

15. (Previously presented): The black image insertion circuit of claim 13, wherein a source and a gate of the black image transistor are connected to the black image line, and a drain of the black image transistor is connected to the first electrode.

16. (Previously presented): The black image insertion circuit of claim 13, wherein a source and a gate of the black image transistor are connected to the first electrode, and a drain of the black image transistor is connected to the black image line.

17. (Previously presented): The black image insertion circuit of claim 13, wherein the black image insertion circuit further comprises a gate driver IC, and the gate driver IC comprises:

at least one first pin connected to the scan line, the first pin is arranged to send an enable signal to switch the switching transistor; and

at least one second pin connected to the black image line, the second pin is arranged to send the black image enable pulse to the black image line, wherein a predetermined time offset exists between the enable signal and the black image enable pulse.

18. (Previously presented): The black image insertion circuit of claim 17, wherein periods of the enable signal and the black image enable pulse are equal.

19. (Previously presented): The black image insertion circuit of claim 17, wherein periods of the enable signal and the black image enable pulse are unequal.

20-22. (Canceled)